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DEPARTMENT OF TRANSPORTATION
NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20591

A70-53

OFFICE OF
THE CHAIRMAN

October 22, 1970

Honorable John H. Shaffer
Administrator
Federal Aviation Administration
Department of Transportation
Washington, D. C. 20590

Dear Mr. Shaffer:

Our staff member who participated in the Irish/British investigation of the Aer Lingus B-707-349C depressurization incident that occurred en route Shannon to London on September 24, 1970, has briefed your Flight Standards personnel on details of the involved fuselage skin fractures, and has supplied your personnel with photographs of the fracture area. As you know, a 3- by 4-foot section of the fuselage sidewall blew out while the aircraft was flying at 25,000 feet, at a cabin pressure differential of 8.2 p.s.i., causing a rapid depressurization of the cabin and deployment of the passenger oxygen masks. The crew initiated an emergency descent and landed the aircraft at London without further incident.

The Royal Aeronautical Establishment metallurgical laboratory at Farnsborough has confined the presence of fatigue in the fracture of the outer main cargo door skin in the area between Fuselage Station 540 and 560. Multiple fatigue nuclei were found at numerous rivet holes near the center of the approximate 22-inch primary fracture line. Heavy nicotine staining on the skin and adjacent frames indicated that cabin air had been exiting through the skin crack for some time. The area had last been inspected 368 hours before the depressurization incident. The total aircraft time was 20,820 hours, and the total number of pressure cycles was 6,344.

While the follow-on Irish/British investigation may eventually indicate that this occurrence was an isolated case, associated perhaps with some past unusual cargo door loading condition, all of the investigating officials believed that it would be prudent to inspect the entire fleet for indications of skin cracking. It

was the consensus of the officials that 150 hours would be an appropriate inspection interval. Moreover, since the B-727QC cargo door is essentially identical to the B-707-300 series door, the B-727 cargo version should also be included in the required inspections. We understand that Boeing has issued Service Bulletins to cover inspection of both aircraft series.

In view of the above, the National Transportation Safety Board recommends:

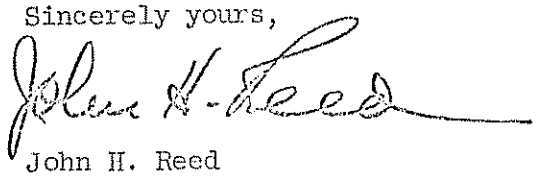
1. That the FAA issue an Airworthiness Directive requiring the inspection of all B-707 and B-727 cargo doors for evidence of fatigue cracking at 150-hour intervals.

2. That FAA reevaluate the design safety features of the single, actuator-type door, and assess the need for and feasibility of incorporation of a dual actuator system to reduce door flexing loads.

We will keep you advised of the progress of the Irish/British investigation, and will supply you with a copy of all reports as they are received.

In accordance with established procedures, this letter will be placed in our public docket at the end of the five working-day period commencing the day after the date of this letter. It is understood, therefore, that there will be no public dissemination of this letter until that time.

Sincerely yours,



John H. Reed
Chairman